Meeting Minutes

Lewis River Aquatic Technical Subgroup

To: Lewis River Aquatic Technical Subgroup Date: November 30, 2023

From: Larissa Rohrbach, ATS Coordinator, Anchor QEA, LLC

Re: Final Minutes of the November 30, 2023, Lewis River Aquatic Technical Subgroup Meeting

The Lewis River Aquatic Technical Subgroup (ATS) meeting was held virtually on November 30, 2023, from 9:00 a.m. to 1:30 p.m. Attendees are listed in Section IV of these meeting minutes.

Action Item Summary

- See Work Plan.
- Erik Lesko will share an updated implementation plan for adult steelhead abundance and composition monitoring (pHOS) by mid-December for ATS review and discussion in the January 4 meeting.
- Erik Lesko and Kevin Young will confirm whether the equipment for rearing stepping-stone program winter steelhead is available from other facilities by December 14.
- Aaron Roberts will ask Mike Chamberlain about potential reasons for daily dissolved oxygen deficits in Lewis River Hatchery ponds.

Agreements or Recommendations

- None.

Review Items

- None.

Finalized Documents

- None.

I. Welcome (Rohrbach/Lesko)

A. Review Agenda

- Rohrbach reviewed the agenda and no changes were requested.

II. ATS Meeting Topics

A. Adult Steelhead Abundance and Composition Monitoring (Lesko)

This is a continuing topic from previous ATS meetings.

Erik Lesko updated the ATS that since the last ATS meeting, there has been email exchanges and discussions between PacifiCorp and WDFW on the topic of collecting adult steelhead to be PIT tagged for use in a mark-recapture model to estimate proportion of hatchery origin spawners (pHOS) in the lower Lewis River (below Merwin Dam). PacifiCorp has proposed using a hook-and-line method, which would be different from the previously-used method of tangle-netting. Lesko sent a proposed framework for the proposed approach to the ATS on Monday, November 27, 2023.

Lesko said PacifiCorp feels they have done their due diligence by talking with Dalton Hance (USGS) who developed the mark-recapture model the tagging is being implemented for and Ian Coulrter (Mount Hood Environmental) who has implemented similar capture and mark approaches in the Cowlitz Basin, and for WDFW. Their decision to use hook-and-line sampling methods to capture fish is also based on 12 years of tangle-netting in the river. Based on feedback from Hance, PacifiCorp has determined that tangle-netting has both spatial and temporal limitations that violate the key assumption of equal probability of capture for use in the pHOS model. Flow and habitat limit where and when tangle nets can be deployed. Hook-and-line angling can be applied in a broad range of habitat types and flow conditions. PacifiCorp staff also have concerns that drifting tangle nets through spawning areas cause widespread indirect impacts that alter spawning behavior and ultimately the spawning success of naturally spawning steelhead.

Kale Bentley said that WDFW is largely aligned on the approach to estimating steelhead pHOS. There has been no lower river monitoring for composition in recent years, and the methods being used have had major limitations. Sampling should be reinitiated and mark-recapture is the best approach. Where WDFW disagrees is the capture methods for adult steelhead in the lower river. When WDFW wrote a memo in August reviewing the approach, we recommended tangle-netting as the capture method based on existing literature and past PacifiCorp sampling, which admittedly was focused on capturing broodstock. Only more recently were concerns raised about tangle-netting as a capture method. WDFW does not have a preferred method; a method needs to be robust both in terms of meeting the assumptions of the pHOS model and that will give us a meaningful pHOS estimate. In past years the model has not been run due to a lack of data (lower sample sizes). Based on past experience running mark-recapture models, estimates can be obtained with few data points, and accounting for biases can be incorporated. In the AOP there should be assumptions documented about what constitutes a meaningful estimate. We agree there are limitations of tangle-netting and that it will have some impact on fish, because there is direct handling of the fish. PacifiCorp has proposed an alternative, but there is not enough information to evaluate hook-and-line capture as an alternative approach. The compromise would be to implement both sampling methods, and compare results at the end of the season to determine which is best. If we are shifting to hook-and-line only, more information is needed to support that decision. As written, sampling only once per week, WDFW feels, will not provide sufficient data. Bentley asked, regarding handling impacts, whether PacifiCorp can provide data on handling injuries to inform those assumptions.

Biases and assumptions

Keely Murdoch asked if literature exists on sampling biases with hook-and-line or tangle-netting? Are some fish more likely to be caught than others? She also asked if it is possible to implement some preliminary sampling before one method is chosen? Lesko answered that the key assumption violated was that tangle-netting can't be fished in all areas across all flows, and so PacifiCorp's position is that it is not a viable option for evaluating pHOS.

Bentley responded that no method can be used everywhere at all times; the sampling is designed to sample different places and to sample representatively. The composition of fish in the sample needs to be representative of the fish on the spawning ground. There are different capture probabilities associated with both methods. The biases of both methods have been discussed informally, but have not been documented. Hance has said in conversations that there should be some simulation done to determine how the biases influence the outcome. This analytical methodology needs to be separated from the concern about the impact of field methods on the fish.

Marc Johnson said he has done some hook-and-line sampling on the Alsea River in Oregon, and there are biases with hook and line sampling. Prior to his work, a study of harvest rates on a new wild broodstock lineage compared to a segregated hatchery broodstock found that the wild broodstock were caught at 4 times the rate of the segregated broodstock. M. Johnson said he agrees, both methods will have some forms of bias and suggested that combining them may show whether the biases balance themselves out.

Murdoch said biases are not inherently bad, as long as they can be accounted for in the model. She said she tend to agree with WDFW on the scientific approach to implement both methods to at least help the ATS understand how these approaches might be biased and to make informed decisions on how to manage that bias in the future.

M. Johnson noted that there is agreement that hook-and-line is a potential method for capturing and tagging adult steelhead in the river; the disagreement is whether tangle-netting should continue if hook-and-line is initiated. The words "not viable" have been used to describe the tangle-netting, but it has been done in the past; perhaps the more accurate description is that its inefficient, which is shown in some of the materials shared. There is still a need for information about whether it's possible to compare the methods side-by-side, understanding there would only be some overlap.

Bentley said the potential problem with tangle-netting is not efficiency (lack of fish captured), it is the concern that it is not representative. Biases may include potentially capturing more males than females due to phenology and jaw morphology, and the data suggest that indeed the catch was 70% to 80% males in the past. The multi-state model relies on tagging some of the fish that ultimately move up to Merwin Trap to quantify the remaining number that actually spawn in river, and that would require a simulation. There is a question whether spawners are disproportionately sampled compared to green fish that would eventually transitioning up to Merwin Trap. If only 30 fish are captured over several weeks, the sample rate will not be able to account for all potential biases. Both methods have limitations, and some limitations can be accounted for in the analysis and some in the sampling.

<u>Sampling impacts and importance of the data</u>

Bentley continued that so far, concerns about tangle-netting have not been documented or quantified, and there are ways to evaluate their impact on the data. For instance, WDFW uses tangle-netting to capture lower Columbia Chum Salmon from the spawning grounds, there is some impact, and WDFW has ESA "take" for that impact, but it is the tradeoff for obtaining some important information.

Jeremiah Doyle said he is reluctant to tangle-net through the spawning ground, disrupting the spawning activity. Bentley said it would be helpful to quantify that; based on your past data, only 2% to 3% are handled. Doyle said a small percentage is still not acceptable. Lesko said the 2% to 3% is an injury rate, however many more fish are displaced by the nets, which are impacts that may not have been clear in PacifiCorps' writeup. Bentley said if the tradeoff is a method that doesn't provide meaningful estimates, why do anything. Glaser said he fully understands the feeling of doing work that is not palatable and that sometimes that is a necessary part of the job to gather information to assess these populations in a way that is meaningful. Melton said she understands Doyle's concern. She said the reason for evaluating pHOS is related to having a hatchery program that is intended to supplement the naturally-spawning population; understanding pHOS in the lower river will be important because that will drive gene flow in the population that is being used for reintroducing fish to the upper basin. That is going to influence NMFS' decision-making about how the program should be managed in the future.

<u>Other approaches for monitoring population composition</u>

Murdoch asked if PacifiCorp has considered developing a PIT-tag-based approach for tagging juveniles then detecting adults as they return to the river? Almost all the elements are in place to do this in the Lewis River. There would have to be enough fish tagged as juveniles. Juveniles would need to be enumerated downstream of Merwin, for instance, with a smolt trap. An instream PIT tag array would also be needed downstream of Merwin Dam to detect returning adults. Recently a modeler was hired by WDFW to use these types of models around the State of Washington. Once the infrastructure is in place, it would take a few years to for tagged juveniles to return as adults before data are obtained. Because it starts with tagging the juveniles, data take a few years to accumulate from detections of returning adults. Glaser agreed that PIT tagging juveniles and in-river detection may be a longer-term solution to consider.

Bentley said the PIT tag approach has been very successful in the Upper Columbia, but he is not aware of implementation in systems that lack dams for interrogating those fish. Fish emigrating from the upper Lewis Basin are being PIT-tagged, however there are only a few dozen that have returned. Doyle said a challenge is the PIT arrays are downstream of the spawning ground in the lower Lewis river which is challenging because of the size of the river and boat traffic. Plate arrays miss the fish migrating higher in the water column. Murdoch said they work well in other systems and agreed to identify a surrogate river system for comparison.

Lesko said in the future, alternative methods using genetic parentage-based tagging or PIT tagged juveniles should be evaluated. PacifiCorp has been in discussions with Cramer Fish Sciences to develop a parentage based tagging approach that has promise in producing conservation based estimates (e.g., effective pHOS and abundance).

Murdoch said PBT works very well for the YN Coho Salmon program in a hatchery-type environment where all of the parental generation can be sampled; problems occur if large numbers of fish return that were not sampled as juveniles, and it doesn’t alleviate the need to handle adults.

<u>ATS process next steps</u>

Glaser said he agrees that the ATS should try to achieve consensus, but this group does not require vote-based consensus. Glaser continued that sufficient written documentation comparing the two techniques has not been provided to agree that due diligence has been done. Assurances need to be provided that sample sizes will be large be enough to obtain meaningful estimates. If there are strong feelings about a method, the scientific basis for a recommended change in methods should be brought to the ATS, so a recommendation to the ACC can be supported. At this time, it is difficult to support this recommendation lacking this evidence that the current method is the wrong approach; or that the different approach would be better.

Bentley said two options have been proposed for moving forward; to implement both tangle-netting and hook-and-line sampling to compare results, or implement only hook-and-line sampling with improvements to provide confidence in the hook and line approach.

Lesko said he supports hook-and-line sampling without tangle-netting for comparison, understanding that more details are needed for the ATS to support that change. Lesko said PacifiCorp is not supportive of implementing both methods simultaneously because tangle-netting violates the key assumption (equal probability of capture) of the model and is therefore not a viable method for estimating pHOS regardless of the observed impacts to naturally spawning steelhead. Bentley said there is not agreement from WDFW, based on the information available at this time.

Glaser said if WDFW supports PacifiCorp to use explore hook-and-line, that decision would not eliminate consideration for other methods forever; if it turns out that hook-and-line does not work as well, those other methods should be considered.

Holowatz said if guides are utilized, PacifiCorp needs to ensure that any reporting requirements are followed by those guides (e.g. daily transparent reporting) and vessels need signage to signal to the public and enforcement that they are research vessels especially if fishing during closed times. Lesko agreed and added that PacifiCorp staff would also be on board each sampling event.

M. Johnson said the proposal is not clear about whether aerated recovery tanks would be used for the welfare of fish; Lesko said that aerated insulated tanks are standard practice for PacifiCorp and would be utilized for the proposed hook and line sampling.

Bentley said comparisons are needed in the proposal between the methods, and the justification is needed, in writing, for changing to hook-and-line capture. PacifiCorp needs to demonstrate how much effort would be needed to provide confidence that by the end of the year, meaningful data will be acquired. For instance, if a minimum sample size of 50 has been recommended, explain why, and explain if adjustments to the model approach are needed if it’s not met. Lesko said PacifiCorp is open to re-evaluating sample sizes and applying more effort with hook-and-line sampling, or planning that sampling differently.

Glaser asked if others are supportive of this approach going forward; WDFW has made a recommendation to compare both methods, but is willing to make a concession to support implementing only hook-and-line sampling for this year. M. Johnson agreed more information could be provided by implementing both methods on biases in the methods. M. Johnson agreed that monitoring of pHOS needs to continue and he would not want this off the table because of a lack of consensus. Anja Huff encouraged a comparison of both methodologies for confidence in the pHOS estimate, capture rates, injuries, observed mortalities, or snagging injuries. She said a direct comparison of methods would be ideal, but that it is better to have some monitoring than no monitoring.

Emi Melton clarified that NOAA Fisheries' participation in the ATS should not be interpreted as Endangered Species Act concurrence.

Bentley said this discussion has been helpful today to include the entire ATS. Lesko said PacifiCorp will need feedback from everyone involved to achieve support from the ATS and meet PacifiCorps' obligations.

PacifiCorp will work toward refining the details in their proposal to be sent back to the ATS in mid-December, to ask for a decision in the January 4, 2024, meeting.

B. Steelhead Transition Plan Implementation in 2024 (All ATS)

Kale Bentley introduced the topic, to determine whether the Steelhead programs can move forward with first phase of the Lewis Steelhead Hatchery Transition Plan. In short, the change in 2024 would be to discontinue the Chambers Creek program and implement the stepping-stone program. If all parties are not prepared to do that, the default for discussions is to continue the Chambers Creek program for another year. Bentley shared a summary of considerations in slides (below).

Topics

- Review of Transition Plan development & the new harvest program
- Steps to start implementing the transition plan
  - ESA coverage
  - Hatchery facility updates
  - Public outreach
  - Broodstock collection
    - Timeline
    - Goals
    - Broodstock source
    - Use & prioritization of returning adults (re-introduction vs. broodstock)
    - In-season tracking & implementation
    - Retrospective evaluation

Bentley reviewed the highlights of the transition plan.

Review of Transition Plan development & the new harvest program

- Transition Plan development for NF Lewis steelhead began in the fall of 2022
- The goal of the Transition Plan was to identify a hatchery program or suite of programs that maximize the probability of achieving the Anadromous Fish Reintroduction Outcome Goal (SA Sec. 3.1)
- WDFW completed an evaluation of alternative hatchery strategies for NF Lewis steelhead using a structured decision-making approach with the objective of identifying an alternative hatchery strategy that could replace the existing harvest-focused, segregated winter-run steelhead program
- Based on the evaluation, the preferred strategy involved maintaining the existing conservation-focused, integrated program and developing a new, locally-derived segregated (aka "stepping stone") program
- *"…the stepping stone program was selected as the preferred alternative in the near-term because it results in similar genetic risks to the fully integrated program while resulting in higher natural-origin and effective natural-origin spawner abundance (primarily because it requires fewer natural-origin adults for broodstock). The stepping-stone program also ameliorates the risk of either over-mining the natural-origin population or failing to meet broodstock goals in years where both SARs and juvenile collection efficiency are low relative to the fully integrated population" (see pg. 2 of Lewis Steelhead Transition Plan)."*

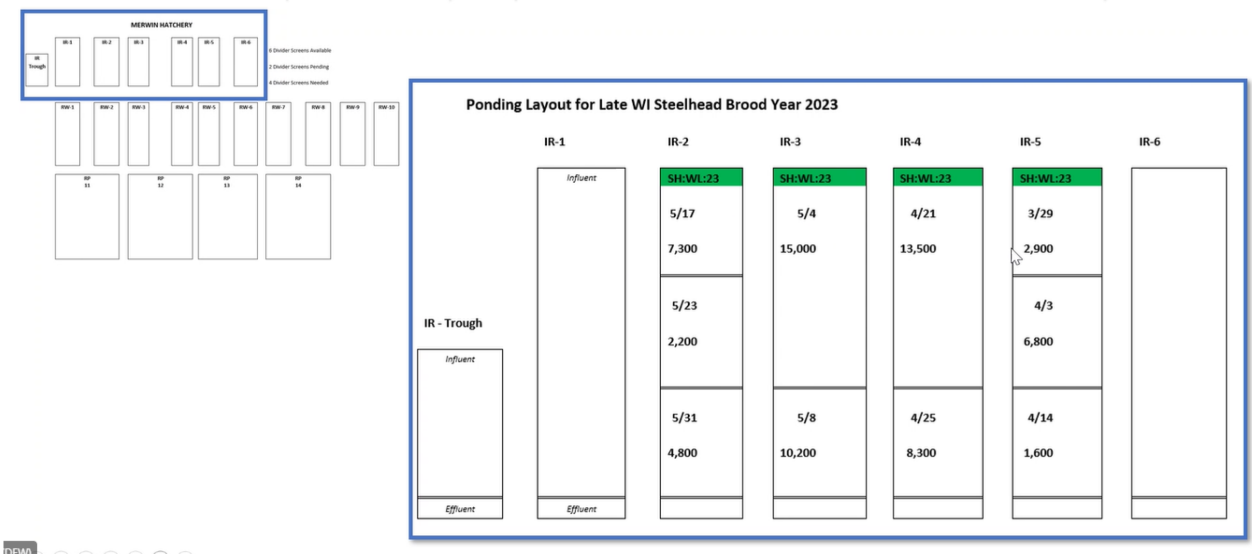
Bentley said the first step is to determine whether the programs can move forward, legally. WDFW believes these programs will require approved Hatchery and Genetic Monitoring Plans (HGMPs); these are in final draft form but have not been submitted to NOAA Fisheries for consultation. NOAA Fisheries has given verbal and written support in the context of ATS and ACC discussions for implementing the program as soon as is feasible.

Kevin Young summarized infrastructure changes needed. He compared the current rearing strategy, showing how juveniles would be ponded by egg take. Currently 6 divider screens are used in rearing troughs and 4 more divider screens would need to be built to add the capacity. There are unknowns about the exact number of egg-takes that will be necessary, and the harvest (stepping-stone) and conservation (integrated) programs will be implemented simultaneously now in a way that they were not in the past.

Steps to start implementing the transition plan

- ESA coverage
  - WDFW & NOAA believe that NF Lewis hatchery programs will ultimately require approved HGMPs
  - HGMPs for summer and winter steelhead have been written but have not yet been submitted to NOAA for consultation
  - NOAA has given approval their approval for the stepping-stone (harvest) program, as described in the Steelhead Transition Plan, to be implemented as soon as possible (i.e., 2024; see July ACC meeting notes)
- Hatchery facility updates
  - Transitioning to the stepping-stone program will require updates at Merwin Hatchery to increase juvenile rearing capacity
  - The updates are needed in anticipation of needing 4-6 eggs takes for the stepping-stone program relative to the 1-2 egg takes for the existing Chambers program
  - The updates will consist of six screens (to divide rearing troughs) and two new intermediate raceways
  - Cost and infrastructure details…

Hatchery facility updates – Merwin Hatchery



Young shared the costs of additional divider screens and intermediate rearing troughs and Young agreed to send the quotes to Lesko.

Young said everything would need to be installed by March. Installation of screens will be relatively easy, the intermediate troughs will require some plumbing, and lead time for fabrication (4 to 6 weeks). As due diligence, Young and Lesko will reach out to other facilities and hatchery managers to identify if intermediate troughs or screens are available that would otherwise be destroyed.

Glaser said that collection of Chambers Creek adults for broodstock has been initiated in case facilities are not ready in time to implement the stepping-stone program. For staff to feel confident not spawning the Chambers Creek stock, there will need to be confirmation that the equipment will be available to move forward. Lesko said he can provide an answer from PacifiCorp within two weeks about whether the equipment can be obtained or accrued to PacifiCorp's budgets.

Josua Holowatz said WDFW is anticipating some strong responses from the public based on experience changing hatchery programs for harvest in other basins, and want to make sure the right information is available to the public. A public outreach communication is in review within WDFW's communications team. The outreach will highlight the genetic reasons for making the change and past catch records to show changes in harvest opportunities. Holowatz said he will be in contact with local groups, and this communication is being planned as a "medium" level approach, which is less detailed than a release for a newspaper article. WDFW can control the content, and it will be issued on their communication channel, which is similar to a blog. The consensus-based approach to decision making within the ACC has been summarized in the post. Lesko said PacifiCorp would not participate in an outreach effort, however under contract, PacifiCorp is committed to work together with WDFW on developing the communication material. Holowatz and Bryce Glaser agreed that nothing will be released without support of PacifiCorp's communications group.

- Public outreach
  - Preemptive approach in response to feedback received when other programs in lower Columbia implemented changes
  - Theme: Coordination by WDFW, PacifiCorp and members of the ACC to develop a steelhead transition plan. Contained in this plan was the preferred alternative for the winter steelhead harvest program that would maximize conservation and harvest benefits while minimizing hatchery risks to the natural-origin population. Regulatory support for ASAP implementation.
  - Issues: Current Chambers program is domesticated out of basin stock. Genetic risk to local populations. Low levels of harvest reported by Catch Record Cards.
  - Data: Catch Record Card reporting for 2010-2022; Current/future smolt releases (summer and both winter)
  - Next Steps: Draft complete and awaiting review by WDFW Public Affairs (anticipate by end of week). Will share with PacifiCorp to review prior to publication
  - Timeline for publication: Mid-December

Bentley then summarized the broodstock collection approach that would be needed for the stepping-stone program. The approach would aim to collect broodstock from the locally-adapted population, but the collection window would be truncated somewhat to reduce the number of egg takes to a feasible level of effort. Bentley said the truncated collection window would not have a large genetic impact because those fish are targeted for harvest. Lesko the exception is that that some of them may spawn in the lower river. Bentley agreed, but said the greater concern is that the program would take individuals from the peak of the returns, and still needs to meet the target numbers for upstream transport.

Bentley said that in most years, all goals will likely be met. In some years with low numbers it will be difficult to meet all program targets (e.g. in a few recent years there have only been around 200 returns). Because the programs are now using some of the hatchery-origin late-winter integrated stock (BWTs) for broodstock, the prioritization needs to apply to all steelhead in the basin. A set of prioritization criteria was suggested for this Recolonization Phase of the program.

Broodstock collection

- Timeline
  - (Existing) Segregated harvest program: brood collected in Nov. (done), spawned in Dec. (TBD)
  - Integrated conservation program: brood collected in Feb. – May, spawned Apr. – May
  - (New) Stepping-stone harvest program: brood collected in Mar – Apr., spawned Apr. May
- Goals
  - Integrated conservation program: 25-30 pair to achieve smolt plant goal of 50K
  - Stepping-stone harvest program: ~32* pairs to achieve smolt plant goal of 75K
    - Unlike integrated program, which typically has 8-10 egg takes, we'd like to achieve the egg collection goal in 2-4 spawn events
      - By condensing the egg takes, juvenile can be reared in higher densities at ponding which would have better growth rates.
      - Fewer egg takes also allows hatchery staff to adjust growth rates better being only a week or two apart without posing health impacts to the fish.
      - Due to the raceway/rearing pond infrastructure at Merwin Hatchery, these fish would then be combined and reared for there remaining life stage to smolt.
    - Condense broodstock collection and complete spawning by end of April or first week of May
      - Because the relationship between collection and spawn timing is not perfectly correlated, the total brood collection target will need to be increased to ensure that we will achieve our 2-4 egg take goal.
      - *Will likely need to increase broodstock collection to ~40-50 pairs to ensure spawning is completed in 2-4 events by early May

Broodstock collection

- Broodstock Source
  - Integrated conservation program: NORs & returning hatchery adults (F1s) from integrated program (see prioritization)
  - Stepping-stone harvest program: F1s from integrated program
- Use & prioritization of returning adults (re-introduction vs. broodstock)
  - In 2022, the ATS developed criteria for the integrated program during the Recolonization Phase
    1. **Demographic replacement** (after harvest) of NORs used for brood for upper basin integrated programs
       - Ensures hatchery has "no net harm" (not operating as a demographic sink that results in fewer fish than if no hatchery)
       - Currently, two hatchery adults (F1s) must be passed upstream for 1 NOR to be collected (assumes 50% RRS for hatchery fish)
    2. **Mining rate** cap on NORS (below cap of 30%; fixed rate for ease of broodstock management)
       - Prioritizes NORs spawning naturally; avoids converting all NORs to HORs and delaying recovery
    3. **Meet (integrated) hatchery brood** take goals for upper basin conservation programs
       - Backfill with hatchery adults (F1s) when #1 or #2 aren't met or to achieve weekly collection targets
    4. **Effective Number of Spawners/X% of full seeding** achieved in upper basin populations (agree on what X is)
       - Demographic boost priorization over minimizing (all) genetic risks associated with hatcheries
    5. **pNOB/pHOS/PNI** targets (TBD)

Meeting the criteria for demographic replacement has never been a problem in previous years because the timing of when fish are passed upstream is earlier than when they are collected for broodstock. Bentley said this recommended criteria is conservatively based on a very low assumed relative reproductive success of hatchery-origin fish of 50%. These criteria are being proposed to provide the demographic boost to the spawning ground during the recolonization phase rather than managing for pHOS, if the population were managed to meet pHOS targets, then very few fish would be allowed on the spawning ground. Marc Johnson asked if the sex of the fish being moved upstream is being tracked. Bentley said the sex ratio can be quite skewed in some years a simple approach may be to make adjustments based on the number of females transported. Glaser noted that information on the sex ratio would be available from fish already passed upstream before brood is collected.

Bentley suggested the program work toward meeting priorities #1 and #2 before moving on to #3 through #5. The lower priorities refer to the tradeoff of collecting more of the F1s for the stepping-stone (harvest) program versus passing them upstream. Karchesky suggested in worst cases when low returns limit both the broodstock program and transport, identifying some minimum number for upstream transport, and if that is not achieved, a conversation with the ATS be convened. Bentley said, by meeting priority #1, there will never be a circumstance where upstream transport is not met. The tradeoff is that to obtain the brood for the integrated program, some BWTs would be passed upstream, however that is the purpose of the BWT program. Glaser noted by implementing the stepping-stone program there is an accepted risk of limitations to the programs in years of low returns, and as juvenile collection improves the numbers of returns will also improve. Glaser said he would hesitate to set a minimum transport goal before meeting the broodstock collection needs during this reintroduction phase.

Emi Melton asked, and Bentley confirmed, that in the scenarios described, off-spring (F2s) from the stepping-stone program would not be passed upstream.

Bentley listed scenarios that could be considered as options that could be considered in years of limited returns.

Broodstock collection

- In-season tracking & implementation
  - WDFW has developed a broodstock collection tracking worksheet
    - Uses daily returns and collections alongside prioritization "rules" to determine collection targets for the following week
    - WDFW staff communicate daily/weekly with PacifiCorp staff
  - The tracking sheet has been updated in anticipation of implementing stepping-stone harvest program
    - Currently, set up to reflect prioritization from previous slide and stepping-stone broodstock goal of 50 pairs
    - Tweaks can easily be made between now & Feb/Mar
- **Retrospective evaluation**
  - Can use adult returns from previous years to evaluate the performance of various prioritization strategies

Data

BY	NOR	BWTs	outmigration year	nor smolts (collected @ Swift)
2012	9	185		
2013	23	724		
2014	9	1,054		
2015	90	1,273	2013	166
2016	52	834	2014	539
2017	87	645	2015	1,277
2018	112	1,223	2016	2,095
2019	74	1,010	2017	1,724
2020	410	726	2018	7,863
2021	168	210	2019	2,941
2022	172	464	2020	4,063
2023	197	683	2021	5,442
2024			2022	5,466

Scenarios

- Demo. Replacement (2:1, 3:1, 4:1)
- Stepping-stone broodstock (number, timing)
- Others??

Holowatz noted that some F1s could be collected at Cedar Creek.

M. Johnson asked if there is any genetic demographic data to inform the relative reproductive success rates for natural or hatchery origin Lewis River steelhead. Bentley said that has not been studied in the basin, but there is a genetic monitoring plan and there is interest in using the Integrated Population Model to understand recruitment rates. M. Johnson said a parentage analysis may be able to inform whether the fish being transported are replacing themselves, or if the fish that are trapped and transported are being mined out of the hatchery program. Bentley said this has been discussed extensively for fish that arrive at the traps; in some years, smolt-to-adult return estimates suggest that some of the fish recruiting to the trap are not from the upper basin, which is evidence that that could be occurring. Karchesky agreed in part, but indicated that prior to reintroduction effort, very few natural origin steelhead were collected at the Merwin Trap and that has changed. The assumption is that most of those fish originated from the upper basin. Bentley said it is managed as one ESA-listed population; management of the lower and upper basin populations have been compartmentalized for various reasons, but they do need to be managed as one continuous population. Karchesky agreed and this is important as new passage systems come online. Bentley said this was at the center of discussion around the fish passage plans; this was monitored during one year but it caused major delays in upstream migration; so a decision was made that if fish enter the trap they should be passed upstream regardless of their identity.

Bentley summarized the conclusions of today's overview and next steps.

- Regarding ESA-coverage for implementing the program, WDFW feels comfortable moving forward. Emi Melton said that generally speaking, she also feels the program can move forward as discussed.
- Infrastructure needs have been discussed and will be confirmed in the coming weeks.
- A framework is in place for specifics of implementation and could go forward now with some minor adjustments as the program rolls out. Holowatz agreed and noted that the fishery can also be adjusted if there are challenges in meeting broodstock. Glaser agreed it’s possible to move forward as long as there is not a reversal from NOAA Fisheries on the use of Chambers Creek stock as a back-up in 2024.
- For Coho Salmon, Anja Huff has been preparing a document to talk through infrastructure needs with PacifiCorp. Then a similar detailed timeline and framework will be prepared for the ATS.

This discussion will continue in the next ATS meeting.

C. Updates: Hatchery Practices and Pathology (Hatchery and Fish Health Staff)

Pathology

Sean Roon said among the spring Chinook salmon to be transferred from Speelyai Hatchery to Lewis Hatchery, one raceway (12 fpp at release group) are showing higher mortality than others which is typical, but the anomaly was they also had a high *Ichthyophthirius* (ich) load. He is working to lower the pathogen prior to transfer, and may need to delay the transfer. The treatment is a long slow formalin drip that takes longer when water temperatures are lower. Roon said because of the way the facility is arranged, the treatment could only be applied in one raceway where it could be most effective. There could be an opportunity upgrade that treatment approach in the future to make it logistically easier. The fish being reared to 8 fpp at release have no problems.

Roon said the disease issues may have been caused by flow limitations which increased densities a bit. Kevin Young said low water conditions were the worst they have ever observed and staff had to reduce flows by 30 to 100 gallons per minute, which may have caused some stress with lower turnover rates at those densities.

Broodstock Collection/ In-season Updates (Hatchery Staff)

Kevin Young said Chambers Creek late winter steelhead are starting to be collected, pending today’s discussion. Ponding has started for spring Chinook salmon at Speelyai hatchery. Early Coho Salmon have been transferred to Lewis Hatchery. The first egg take for summer steelhead started yesterday at Merwin Hatchery. Mike Chamberlain said Lewis Hatchery is waiting on the transfer of the spring Chinook salmon from Speelyai Hatchery as Roon described. The second spawn of late coho salmon has been implemented, approximately 500,000 more eggs are needed, about 600,000 have been collected. Some broodstock are being held for Washougal to spawn.

Kale Bentley asked how the additional Coho salmon transport was progressing and why some of the numbers shared last month were not accurate. Young said they WDFW coordinated with PacifiCorp and some missing datasheets were found. Bentley noted that fish transported for the Habitat Preparation Plan were also included, which is a limitation of the data management within WDFW. Karchesky said about 10,000 Coho Salmon have been transported upstream. The collection for upstream transport was frontloaded in November to transport better condition fish, as discussed in the previous ATS meeting. There appears to be a lull in returns at both Lewis and Merwin traps. Josua Holowatz said it appears that late component is in a lull basin-wide; the run has slowed on the Cowlitz and other places.

Bryce asked if data sharing and database development still on our workplan as a topic to be revisited next year. Bentley acknowledged there is a lot of in-season and Monitoring & Evaluation data, and suggested starting with a list of what data should be shared more easily in season, such as counts at the traps and dams. He suggested that a more streamlined file sharing approach is a place to start, understanding there are firewall problems with having a common portal. Rohrbach will include this as a discussion topic for the next meeting.

III. ATS Administration (Rohrbach)

A. Review Next Meeting Topics (Rohrbach)

The late December meeting will be shifted to a virtual meeting on January 4, 2024.

- In-person and virtual meeting schedule for 2024.
- Adult Steelhead Abundance and Composition Monitoring – Continued discussion
- In-season data management.
- AOP for 2024.

IV. List of Attendees

Name	Affiliation
Larissa Rohrbach	Anchor QEA
Jeremiah Doyle	PacifiCorp
Chris Karchesky	PacifiCorp
Erik Lesko	PacifiCorp
Amelia Johnson	LCFRB
Marc Johnson	NMFS
Emi Melton	NMFS
John Plumb	USGS
Kale Bentley	WDFW
Mike Chamberlain	WDFW
Bryce Glaser	WDFW
Josua Holowatz	WDFW
Anja Huff	WDFW
Aaron Roberts	WDFW
Sean Roon	WDFW
Kevin Young	WDFW
Keely Murdoch	YN